

Claims

What Is Claimed Is:

1. A purified and isolated or recombinantly produced
5 compound having the formula:



10 or a pharmaceutically acceptable salt or an N-terminal
acylated or C-terminal amidated or esterified form thereof,
which is either in a linear form or in a cystine-bridged form,
wherein:

each of A_1 and A_9 is independently a basic amino acid;

each of A_2 and A_3 is independently a small amino acid;

15 each of A_5 , A_7 , A_{12} , A_{14} and A_{16} is independently a
hydrophobic amino acid;

A_4 is a basic or a small amino acid;

A_{10} is a basic or a small amino acid or is proline;

A_{11} is a basic or a hydrophobic amino acid;

20 A_{17} is not present or, if present, is a small amino acid;
 A_{18} is not present or, if present, is a basic amino acid;
and

each of C_6 , C_8 , C_{13} and C_{15} is independently selected from
the group consisting of cysteine, a hydrophobic amino acid, a
25 large polar amino acid and a small amino acid.

2. The compound of claim 1 which has one or more
characteristics selected from the group consisting of:

30 the C-terminal carboxyl is of the formula selected from
the group consisting of COOH or salts thereof; COOR , CONH_2 ,
 CONHR and CONR_2 wherein each R is independently a hydrocarbyl
(1-6C);

the amino group at the N-terminus is of the formula NH_2 or
 NHCOR wherein R is a hydrocarbyl (1-6C);

35 each of A_1 and A_9 is independently selected from the group
consisting of R, K and Har;

each of A₂ and A₃ is independently selected from the group consisting of G, A, S and T;

A₄ is R or G;

5 each of A₅, A₁₄, and A₁₆ is independently selected from the group consisting of I, V, NLe, L and F;

each of A₇ and A₁₂ is independently selected from the group consisting of I, V, L, W, Y and F;

A₁₀ is R, G or P; and

A₁₁ is R or W.

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3. The compound of Claim 1 which has antimicrobial or antiviral activity against pathogens associated with sexually transmitted disease.

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4. The compound of Claim 1 which has antimicrobial or antiviral activity against *Escherichia coli*, *Listeria monocytogenes*, *Candida albicans*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, *Salmonella typhimurium*, *Staphylococcus aureus*, *Histoplasma capsulatum*, *Mycobacterium avium-intracellulare*, *Mycobacterium tuberculosis*, *Vibrio vulnificus*, *Chlamydia trachomatis*, *Treponema pallidum*, *Neisseria gonorrhoeae*, *Trichomonas vaginalis*, Herpes simplex virus type 1, Herpes simplex virus type 2, human immunodeficiency virus, *Hemophilus ducreyi*, or human papilloma virus.

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5. The compound of claim 1 which is selected from the group consisting of

PG-1: RGGRLCYCRRRFCVVCVGR (SEQ ID NO:16);

PG-2: RGGRLCYCRRRFCICV (SEQ ID NO:17);

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PG-3: RGGGLCYCRRRFCVVCVGR (SEQ ID NO:18);

PG-4: RGGRLCYCRGWICFCVGR (SEQ ID NO:19);

PG-5: RGGRLCYCRPRFCVVCVGR (SEQ ID NO:20);

and the amidated forms thereof either in linear or cystine-bridged form.

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6. A pharmaceutical composition comprising a compound according to Claim 1 and a pharmaceutically acceptable excipient.

5 7. A method of inhibiting the growth of a microbe or the replication of a virus which comprises the step of contacting said virus or said microbe with an amount of a compound according to Claim 1 effective to inhibit said growth or said replication.

10 8. The method of Claim 7 in which the microbe is a bacteria.

15 9. The method of Claim 7 in which the microbe or virus is a sexually-transmitted microbe or virus.

20 10. The method of Claim 9 in which the sexually-transmitted microbe or virus is selected from the group consisting of HIV-1, *Chlamydia trachomatis*, *Treponema pallidum*, *Neisseria gonorrhoeae*, *Trichomonis vaginalis*, HSV-1, HSV-2, *Hemophilus ducreyi* and human papilloma virus

25 11. The method of Claim 7 in which the microbe or virus is HIV.

 12. The method of Claim 7 in which the microbe or virus is methicillin-resistant *S. aureus* (MRSA) or vancomycin-resistant *E. faecalis* (VREF).

30 13. A method to treat or prevent a microbial or viral infection in a subject, which method comprises administering to a subject in need of such treatment an amount of a compound according to Claim 1 effective to ameliorate or prevent said infection in the subject.

14. The method of Claim 13 in which the infection is a bacterial infection.

15. The method of Claim 14 in which the bacteria is selected from the group consisting of *E. Coli*, *L. monocytogenes*, *B. subtilis*, *S. typhimurium*, *S. aureus* and *P. aeruginosa*.

16. The method of Claim 13 in which the infection is caused by a sexually-transmitted pathogen.

17. The method of Claim 16 in which the sexually-transmitted pathogen is selected from the group consisting of HIV-1, *Chlamydia trachomatis*, *Treponema pallidum*, *Neisseria gonorrhoeae*, *Trichomonis vaginalis*, HSV-1, HSV-2, *Hemophilus ducreyi* and human papilloma virus.

18. The method of Claim 13 in which the infection is an HIV infection.

19. The method of Claim 13 in which the infection is a methicillin-resistant *S. aureus* (MRSA) or vancomycin-resistant *E. faecalis* (VREF) infection.

20. The method of Claim 13 in which the compound is administered topically.

21. The method of Claim 13 in which the compound is administered prophylactically.